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OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, L.L.P.
1940 DUKE STREET
ALEXANDRIA, VA 22314

EXAMINER
DHINGRA, RAKESH KUMAR

ART UNIT	PAPER NUMBER
1716	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentdocket@oblon.com
oblonpat@oblon.com
jgardner@oblon.com

Office Action Summary	Application No.	Applicant(s)	
	10/578,184	OHMI ET AL.	
	Examiner	Art Unit	
	RAKESH DHINGRA	1716	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 June 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7,10 and 12-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7,10 and 12-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *04 May 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1) The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 1 rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. In this case claim 1 appears to conform to the Fig. 2 (First Embodiment) and the specification (paragraphs 0029-0068) does not disclose that this embodiment has a pressure of the cooling medium channel as 0.2 to 1 MPa.

2) The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 14 recites the limitation "in claim 3, wherein the heat insulating part" in lines 1, 2. There is insufficient antecedent basis for this limitation in the claim. For the purpose of examination on merits this limitation has been interpreted as ”in claim 3, wherein the processing gas supply part is attached to the processing vessel through a heat insulating part, and wherein the heat insulating part”.

Response to Arguments

Applicant's arguments with respect to claims 1-11 have been considered but are moot in view of the new ground(s) of rejection as explained hereunder.

Applicant has amended claims 1, 3, 7 by adding new limitations, e.g. in claim 1 new limitation “”wherein a pressure of the cooling medium channel is 0.2 to 1 MPa” has been added. Further applicant has cancelled claim 8, 9 and added new claims 15-16.

Accordingly claims 1- 7, 10 and 12-16 are now pending and active.

New reference by Hunt et al (US 5,997,956), and reference by Maruyama (JP 02-55292) when combined with Ohmi et al read on limitation of amended claim 1 including the newly added limitation. Accordingly claims 1, 2 have been rejected under 35 USC 103 (a) as explained below. Further, new reference by Hunt et al (US 5,997,956), and reference by Maruyama (JP 02-55292) when combined with Ohmi et al and Harano et al read on limitation of amended claim 3. Accordingly claims 3-6, 10 have been rejected under 35 USC 103 (a) as explained below. Balance claims 7 and 12-16 have also been rejected under 35 USC 103 (a) as explained below.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohmi et al (US PGPUB 2003/0178144) in view of Maruyama (JP 02-55292) and Hunt et al (US 5,997,956).

Regarding Claim 1: Ohmi et al teach a plasma apparatus comprising:

a processing vessel 11 having a holder 13 holding a substrate 12 to be processed;

a microwave antenna 20 provided on the processing vessel so as to oppose the substrate to be processed; and

a processing gas supply part 31 provided between the substrate to be processed on the holder 13 and the microwave antenna 20 so as to oppose the substrate to be processed,

the process gas supply part 31 has a plurality of first openings 31A through which plasma formed in the processing vessel passes, a process gas channel 31B connectable to a process gas source, a plurality of second openings 31D communicating with the process gas channel. Ohmi et al also teach a cooling medium channel 31e in the processing gas supplying part 32 through which a coolant flows to enable provide proper temperature of the process gas (e.g. Figs. 3 -5, 11 and para. 0049-0051, 0062-0070, 122).

Ohmi et al do not teach the cooling medium includes a cooling gas a mist, a cooling medium mixer to generate and supply the cooling medium to the cooling medium channel of the process gas supply part, and wherein a pressure of the cooling medium channel is 0.2 to 1 MPa.

Maruyama teaches a substrate processing apparatus comprising a cooling arrangement for cooling an inner reaction tube 1 and wherein the cooling arrangement supplies a cooling medium to a cooling channel 6 and wherein the cooling medium includes a cooling gas (nitrogen), and water mist, a cooling medium mixer 14, 12 to generate and supply the cooling medium to the cooling medium channel (e.g. Figs. 1-3 and Abstract). It would be obvious to use the cooling medium mixer that supplies a mixture of cooling gas and water mist, as taught by Maruyama in the apparatus of Ohmi et al to provide efficient cooling of the gas supply part.

Therefore it would have been obvious to one of ordinary skills in the art at the time of the invention to provide a cooling medium mixer that generates and supplies the cooling medium to the cooling medium channel of the process gas supply part, as taught by Maruyama in the apparatus of Ohmi et al to provide efficient cooling of the gas supply part.

Ohmi et al in view of Maruyama do not explicitly teach that the pressure of the cooling medium channel is 0.2 to 1 MPa.

Hunt et al teach a substrate processing apparatus wherein a substrate 140 is cooled by a cooling arrangement 190 that provides a cooling medium comprising gas (air) and water mist mixture. Hunt et al further teach that the pressure of such a cooling medium can be 80 PSI (0.55 MPa). Hunt et al also teach that successful coating requires appropriate cooling of the substrate at the temperature of the process gases. It would be obvious to control the pressure of the cooling medium so as to provide adequate cooling for satisfactorily coating the substrate (e.g. Fig. 1 and col. 20, line 58 to col. 21, line 50).

Therefore it would have been obvious to one of ordinary skills in the art at the time of the invention to control the pressure of the cooling medium as taught by Hunt et al in the apparatus of Ohmi et al in view of Maruyama to provide adequate cooling of the apparatus part required to be cooled.

Regarding Claim 2: Claim limitations regarding cooling medium including SF6 pertain to contents of apparatus during intended operation of the apparatus and is not considered to add patentable weight.

In this regard courts have ruled:

Expressions relating the apparatus to contents thereof during an intended operation are of no significance in determining patentability of the apparatus claim. Ex parte Thibault, 164 USPQ 666, 667 (Bd. App. 1969).

Claims 3-6, 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohmi et al (US PGPUB 2003/0178144) in view of in view of Maruyama (JP 02-55292), Hunt et al (US 5,997,956) and Harano et al (US 2003/0126872).

Regarding Claim 3: Ohmi et al in view of Maruyama and Hunt et al teach all limitations of the claim (as already explained above under claim 1) including process gas introducing part with a cooling medium channel 31e in the processing gas supplying part 32 through which a coolant flows to enable provide proper temperature of the process gas (Ohmi et al - Figs. 3 -5, 11 and para. 0049-0051, 0062-0070, 122) and that the cooling medium includes a cooling as and mist of water (Maruyama - Figs. 1-3 and Abstract) and that a pressure of the cooling medium is 0.2 to 1 MPa (Hunt et al - Fig. 1 and col. 20, line 58 to col. 21, line 50).

Ohmi et al in view of Maruyama and Hunt et al do not teach a cooling medium circulator is connected to the cooling medium channel and is configured to circulate the cooling medium.

However use of a heat exchanger (circulator) for circulating the cooling medium is known in the art as per reference cited hereunder.

Harano et al teach a wafer processing apparatus comprising a circulator connected to a cooling medium channel 21 and configured to circulate a cooling medium, and that includes a compressor 26 configured to compress the cooling medium and a tank 22 (reserve tank) that circulates (includes retains) the compressed cooling medium as per temperature and flow requirements (e.g. Fig. 1 and para. 0022 – 0034). It would be obvious to provide a cooling medium circulator as per teaching of Harano et al in the apparatus of Ohmi et al to control temperature of the process gas supplying part, to enable control temperature of the process gas.

Therefore it would have been obvious to one of ordinary skills in the art at the time of the invention to provide a circulator for circulating a cooling medium as taught by Harano et al in the apparatus of Ohmi et al in view of Maruyama and Hunt et al to control temperature of the process gas supplying part, to enable control temperature of the process gas.

Regarding Claim 4: Harano et al teach the circulator includes heat exchangers 25, 29 for cooling the cooling fluid (Fig. 1 and para. 0022).

Regarding Claims 5, 6: Applicant has invoked 35 USC 112, 6th paragraph in respect of claim limitations –" cooling medium control means" for which the applicant's disclosed structure includes a mass flow controller /variable conductance valve 55 (Fig. 7 and page 23, line 10 to page 25, line 15). Further, regarding claim limitation "temperature measurement means" 35 USC 112, 6th paragraph is not considered to be invoked since applicant has not disclosed any specific structure for temperature measurement means 57 (specification – para. 0097).

Harano et al teach the cooling medium circulator includes a temperature sensor 23, a temperature controlling device 34 and a coolant medium flow rate controlling device 40 such

that flow rate of cooling medium is controlled based upon sensed temperature (Harano et al – Fig. 1 and para. 0025-0032).

Regarding Claim 10: Claim limitation regarding the cooling medium including SF6 pertains to contents of apparatus during intended operation of the apparatus and is not considered to add patentable weight.

In this regard courts have ruled:

Expressions relating the apparatus to contents thereof during an intended operation are of no significance in determining patentability of the apparatus claim. Ex parte Thibault, 164 USPQ 666, 667 (Bd. App. 1969).

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ohmi et al (US PGPUB 2003/0178144) in view of Maruyama (JP 02-55292), Hunt et al (US 5,997,956) and Harano et al (US 2003/0126872) as applied to claims 3-6, 10 and further in view of Paganessi (US 5,660,047).

Regarding Claim 7: Ohmi et al in view of Maruyama, Hunt et al and Harano et al teach all limitations of the claim except the cooling medium control means is a pressure control means for controlling pressure of the cooling medium.

Applicant has invoked 35 USC 112, 6th paragraph in respect of claim limitations –" cooling medium control means" for which the applicant's disclosed structure includes a mass flow controller /variable conductance valve 55 (Specification - Fig. 7 and para. 0090, 0097).

Paganessi teaches a plasma apparatus comprising a cooling control means that includes pressure control means 40 that controls 14, 16, 24, 26 etc based on input from pressure sensors P and temperature sensors T (e.g. Fig. 1 and col. 4, lines 46-55). Though Paganessi do not explicitly teach that the temperature control means controls temperature of process gas supplying

part it would be obvious to provide the same for obtaining temperature control of process gas supplying part based on the temperature measured by the temperature measurement means.

Therefore it would have been obvious to one of ordinary skills in the art at the time of the invention to provide pressure control as the cooling medium control means as taught by Paganessi in the apparatus of Ohmi et al in view of Maruyama, Hunt et al and Harano et al as a known alternate means to control temperature of the process gas supplying part.

In this regard courts have ruled:

The selection of a known material based on its suitability for its intended use is prima facie obviousness. *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945).

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ohmi et al (US PGPUB 2003/0178144) in view of Maruyama (JP 02-55292) and Hunt et al (US 5,997,956) as applied to claims 1, 2 and further in view of Chen et al (US 2003/0121608).

Regarding Claim 12: Ohmi et al in view of Maruyama and Hunt et al teach all limitations of the claim except the processing gas supply part is attached to the processing vessel through a heat insulating part.

However provision of a heat insulating part between the gas line and the processing vessel is known in the art as per reference cited hereunder.

Chen et al teach a wafer processing apparatus comprising gas lines 255 (processing gas supply part) that do not contact a chamber body 202 and are separated from the chamber body by an insulating part which minimizes the heat transfer between the gas lines and the chamber body 202 (e.g. Fig. 15 and para. 0097). It would be obvious to provide a heat insulating part between

the process gas supply part and the processing vessel as taught by Chen et al in the apparatus of Ohmi et al in view of Maruyama and Hunt et al to minimize the heat transfer between the gas lines and the chamber body.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to provide a heat insulating part between the process gas supply part and the processing vessel as taught by Chen et al in the apparatus of Ohmi et al in view of Maruyama and Hunt et al to minimize the heat transfer between the process gas supply part and the chamber body.

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ohmi et al (US PGPUB 2003/0178144) in view of Maruyama (JP 02-55292), Hunt et al (US 5,997,956) and Chen et al (US 2003/0121608) as applied to claim 12 and further in view of Keller et al (US 2002/0069968).

Regarding Claim 13: Ohmi et al in view of Maruyama, Hunt et al and Chen et al teach all limitations of the claim including a heat insulating part between the process gas supply part and the processing vessel, but do not teach the heat insulating part includes two components and the two components increase a thermal resistance between the processing vessel and the process gas supply part.

Keller et al teach a plasma apparatus comprising a gas inlet manifold 20-32 that thermally isolates a gas distribution plate 20 (process gas supply part) from the other chamber components e.g. lid 18 and chamber wall 10, which reduces heat loss from the perimeter of the gas diffuser between the center and the perimeter of the gas distribution plate. Keller et al further teach that thermal insulation is achieved by parts like inlet manifold side wall 24, backwall 28 etc (i.e. two

components included in the heat insulating part) {these two parts would increase thermal resistance between the processing vessel and the process gas supply part}[e.g. Fig. 1 and para. 0111-0114]. It would have been obvious to provide the heat insulating part having two parts, between the process gas supply part and the processing vessel as taught by Keller et al in the apparatus of Ohmi et al in view of Maruyama, Hunt et al and Chen et al to minimize heat loss from the process gas supply part to the processing vessel and supply the gas at a uniform temperature to the processing region in the chamber.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the heat insulating part with two components as taught by Keller et al in the apparatus of Ohmi et al in view of Maruyama, Hunt et al and Chen et al to minimize heat loss from the process gas supply part to the processing vessel and supply the gas at a uniform temperature to the processing region in the chamber.

Further, claim limitation "increase a thermal resistance between the processing vessel and the process gas supply part" is a functional limitation, and since the structure of the prior art apparatus meets the structural limitations of the claim, the same is considered capable of meeting the functional limitation.

In this regard courts have ruled:

While features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function. [In re Schreiber, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429, 1431-32 (Fed. Cir. 1997)].

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ohmi et al (US PGPUB 2003/0178144) in view of Maruyama (JP 02-55292), Hunt et al (US 5,997,956),

Harano et al (US 2003/0126872) and Chen et al (US 2003/0121608) as applied to claim 3-6, 10 and further in view of Keller et al (US 2002/0069968).

Regarding Claim 14: Ohmi et al in view of Maruyama, Hunt et al, Harano et al and Chen et al teach all limitations of the claim (as also explained under claims 1, 3, 12) including a heat insulating part between the gas line 255 and the processing vessel 202 (Chen et al – Fig. 15 and para. 0097), but do not teach the heat insulating part includes two components and the two components increase a thermal resistance between the processing vessel and the process gas supply part.

Keller et al teach a plasma apparatus comprising a gas inlet manifold that thermally isolates a gas distribution plate 20 (process gas supply part) from the other chamber components e.g. lid 18 and chamber wall 10, which reduces heat loss from the perimeter of the gas diffuser between the center and the perimeter of the gas distribution plate. Keller et al further teach that thermal insulation is achieved by parts like inlet manifold side wall 24, backwall 28 etc (i.e. two components included in the heat insulating part) {these two parts would increase thermal resistance between the processing vessel and the process gas supply part} [e.g. Fig. 1 and para. 0111-0114]. It would have been obvious to provide the heat insulating part between the process gas supply part and the processing vessel with two components as taught by Keller et al in the apparatus of Ohmi et al in view of Maruyama, Hunt et al, Harano et al and Chen et al to minimize heat loss to the from the process gas supply part to the processing vessel and supply the gas at a uniform temperature to the processing region in the chamber.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the heat insulating part with two components as taught by Keller et al in the apparatus of Ohmi et al in view of Maruyama, Hunt et al, Harano et al and Chen et al to

minimize heat loss to the from the process gas supply part to the processing vessel and supply the gas at a uniform temperature to the processing region in the chamber.

Further, claim limitation "increase a thermal resistance between the processing vessel and the process gas supply part is a functional limitation, an since the structure of the prior art apparatus meets the structural limitations of the claim, the same is considered capable of meeting the functional limitation.

In this regard courts have ruled:

While features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function. [In re Schreiber, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429, 1431-32 (Fed. Cir. 1997)].

Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ohmi et al (US PGPUB 2003/0178144) in view of in view of Maruyama (JP 02-55292), Hunt et al (US 5,997,956) and Harano et al (US 2003/0126872) as applied to claims 3-6, 10 and further in view of Moore et al (US 2003/0161946).

Regarding Claim 15: Ohmi et al in view of Maruyama, Hunt et al and Harano et al teach all limitations of the claim including the cooling medium circulator is configured to control the circulation of the cooling medium by the compressor 26 based upon inputs given by the temperature sensor 23 and the status monitor 50 to the temperature controlling device 30 and the flow rate controlling device 40, so as to cool the plasma apparatus and maintain the same at a predetermined temperature (Harano et al – Fig. 1 and para. 0017-0034).

Ohmi et al in view of Maruyama, Hunt et al and Harano et al do not explicitly teach the process gas supply part is maintained at a temperature approx. 100 - 200 degrees C.

Moore et al teach an apparatus for coating interior surface of a conduit, wherein a cool air water mist flush is directed at the interior surface of the conduit to enable cool the same. Moore et al further teach that the flow rate of the cooling mist is controlled with regard to the temperature of the conduit or the workpiece during coating (e.g. Fig. 1 and para. 0037). It would be obvious to control the flow rate of the cool air water mist depending upon the temperature of the process gas supply part.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to control the flow rate of the cool air water mist as taught by Moore et al in the apparatus of Ohmi et al in view of Maruyama, Hunt et al and Harano et al depending upon the temperature of the process gas supply part.

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ohmi et al (US PGPUB 2003/0178144) in view of Maruyama (JP 02-55292) and Hunt et al (US 5,997,956) as applied to claims 1, 2 and further in view of Horiuchi et al (US 4,963,713).

Regarding Claim 16: Ohmi et al in view of Maruyama and Hunt et al teach all limitations of the claim including the a pressure of the cooling medium is between 0.2 and 1 MPa (Hunt et al - col. 20, line 58 to col. 21, line 50), but do not explicitly teach the apparatus further comprising pressure control means for maintaining pressure of the cooling medium channel between 0.2 and 1 MPa.

However provision of a pressure controller to control pressure of cooling medium is known in the art as per reference cited hereunder.

Horiuchi et al teach a plasma apparatus comprising a coolant supply system that includes a pressure controller 38 besides a flow rate adjusting controller 31 that enables to control

temperature of the electrode and obtain uniform processing (e.g. Fig. 3 and col. 6, lines 35-55). Further, it would be obvious to use a pressure controller that would cover the expected pressure range of the cooling medium.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to provide a pressure control device as taught by Horiuchi et al in the apparatus of Ohmi et al in view of Maruyama and Hunt et al to obtain uniform cooling of the process gas supply part.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to RAKESH DHINGRA whose telephone number is (571)272-5959. The examiner can normally be reached on 8:30 - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571-272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/R. D./
Examiner, Art Unit 1716

/Karla Moore/
Primary Examiner, Art Unit 1716